

Application No. 10/098,683
Amendment dated May 3, 2006
Reply to Office Action of November 25, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-53. (cancelled)

54. (currently amended) An apparatus comprising:

an interbody spinal fusion implant for surgical implantation within a disc space between two adjacent vertebral bodies in a segment of a human spine, said implant comprising upper and lower portions for contacting each of the adjacent vertebral bodies when positioned therein, each of said upper and lower portions having at least one opening adapted to communicate with one of the adjacent vertebral bodies, said openings of said upper and lower portions being in communication with one another and adapted for permitting for the growth of bone from adjacent vertebral body to adjacent vertebral body through said implant, each of said openings having a central longitudinal axis and an area transverse to the central longitudinal axis, said implant including a hollow interior for holding bone growth promoting material, said hollow interior being in communication with at least one opening in each of said upper and lower portions, said implant having an insertion end for entry into the spine and a trailing end, said trailing end having a rear wall between said upper and lower portions, said hollow interior having an interior surface with a total surface area greater than the combined transverse areas of the openings in said upper and lower portions rear wall being integrally formed with said upper and lower portions of said implant;

bone morphogenetic protein in at least a portion of said hollow interior to promote bone growth from adjacent vertebral body to adjacent vertebral body through said implant; and

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a fusion promoting material other than bone and other than bone morphogenetic protein, said fusion promoting material being in at least a portion of said hollow interior to promote bone growth from adjacent vertebral body to adjacent vertebral body through said implant.

55. (previously presented) The apparatus of claim 54, wherein at least a portion of said upper and lower portions are arcuate along at least a portion of their length.
56. (previously presented) The apparatus of claim 54, wherein said upper and lower portions further comprise a protrusion for engaging the adjacent vertebral bodies.
57. (previously presented) The apparatus of claim 56, wherein said protrusion is a thread.
58. (previously presented) The apparatus of claim 54, wherein said insertion end is open for loading bone growth promoting material into said hollow interior.
59. (previously presented) The apparatus of claim 58, further comprising an end cap for closing said open end.
60. (previously presented) The apparatus of claim 54, wherein said hollow interior is a chamber and the bone growth promoting material includes a bone graft.
61. (previously presented) The apparatus of claim 54, wherein said implant is configured for implantation across the disc space in the thoracolumbar region of the human spine.
62. (previously presented) The apparatus of claim 54, wherein said spinal implant includes an artificial material other than bone.
63. (previously presented) The apparatus of claim 54, wherein said implant is made of an artificial material that is stronger than bone.
64. (previously presented) The apparatus of claim 54, wherein said implant is made of an artificial material that is harder than bone.
65. (previously presented) The apparatus of claim 54, wherein said implant comprises harvested bone.

Claim 66 (cancelled).

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67. (previously presented) The apparatus of claim 54, wherein said fusion promoting material includes hydroxyapatite.
68. (previously presented) The apparatus of claim 54, wherein said implant is treated with a bone growth promoting substance.
69. (previously presented) The apparatus of claim 54, wherein said implant is a source of osteogenesis.
70. (previously presented) The apparatus of claim 54, wherein said implant is at least in part bioabsorbable.
71. (currently amended) The apparatus of claim 54, wherein said implant comprises at least one of a metal, a plastic material, and a ceramic material.
72. (currently amended) The apparatus of claim 54, wherein said upper and lower portions of said implant have a non-threaded exterior surface comprises a plastic material.
73. (currently amended) The apparatus of claim 54, wherein said implant has a length, said upper and lower portions having a non-arcuate portion along at least a portion of the length of said implant comprises a ceramic material.
74. (previously presented) The apparatus of claim 54, wherein said implant is formed of a porous material.
75. (previously presented) The apparatus of claim 54, wherein said implant is formed of a material that intrinsically participates in the growth of bone from adjacent vertebral body to adjacent vertebral body through said implant.
76. (previously presented) The apparatus of claim 54, wherein said at least one opening is adapted to retain fusion-promoting materials
77. (previously presented) The apparatus of claim 54, wherein at least a portion of said implant is treated to promote bone ingrowth between said implant and said adjacent vertebral bodies.
78. (previously presented) The apparatus of claim 54, wherein said implant is in combination with harvested bone.

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79. (currently amended) An apparatus comprising:

an interbody spinal fusion implant for surgical implantation within a disc space between two adjacent vertebral bodies in a segment of a human spine, said implant comprising upper and lower portions for contacting each of the adjacent vertebral bodies when positioned therein, each of said upper and lower portions having at least one opening adapted to communicate with one of the adjacent vertebral bodies, said openings of said upper and lower portions being in communication with one another and adapted for permitting for the growth of bone from adjacent vertebral body to adjacent vertebral body through said implant, each of said openings having a central longitudinal axis and an area transverse to the central longitudinal axis, said implant including a hollow interior for holding bone growth promoting material, said hollow interior being in communication with at least one opening in each of said upper and lower portions, said implant having an insertion end for entry into the spine and a trailing end, said trailing end being adapted so as to be connectable to another interbody spinal implant having a trailing end adapted to be connected to said interbody spinal fusion implant, said hollow interior having an interior surface with a total surface area greater than the combined transverse areas of the openings in said upper and lower portions;

bone morphogenetic protein in at least a portion of said hollow interior to promote bone growth from adjacent vertebral body to adjacent vertebral body through said implant; and

a fusion promoting material other than bone and other than bone morphogenetic protein said fusion promoting material being in at least a portion of said hollow interior to promote bone growth from adjacent vertebral body to adjacent vertebral body through said implant.

80. (previously presented) The apparatus of claim 79, wherein at least a portion of said upper and lower portions are arcuate along at least a portion of their length.

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81. (previously presented) The apparatus of claim 79, wherein said upper and lower portions further comprise a protrusion for engaging the adjacent vertebral bodies.
82. (previously presented) The apparatus of claim 81, wherein said protrusion is a thread.
83. (previously presented) The apparatus of claim 79, wherein said insertion end is open for loading bone growth promoting material into said hollow interior.
84. (previously presented) The apparatus of claim 83, further comprising an end cap for closing said open end.
85. (previously presented) The apparatus of claim 79, wherein said hollow interior is a chamber and the bone growth promoting material includes a bone graft.
86. (previously presented) The apparatus of claim 79, wherein said implant is configured for implantation across the disc space in the thoracolumbar region of the human spine.
87. (previously presented) The apparatus of claim 79, wherein said spinal implant includes an artificial material other than bone.
88. (previously presented) The apparatus of claim 79, wherein said implant is made of an artificial material that is stronger than bone.
89. (previously presented) The apparatus of claim 79, wherein said implant is made of an artificial material that is harder than bone.
90. (previously presented) The apparatus of claim 79, wherein said implant comprises harvested bone.

Claim 91 (cancelled).

92. (previously presented) The apparatus of claim 79, wherein said fusion promoting material includes hydroxyapatite.
93. (previously presented) The apparatus of claim 79, wherein said implant is treated with a bone growth promoting substance.
94. (previously presented) The apparatus of claim 79, wherein said implant is a source of osteogenesis.

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95. (previously presented) The apparatus of claim 79, wherein said implant is at least in part bioabsorbable.
96. (currently amended) The apparatus of claim 79, wherein said implant comprises at least one of a metal, a plastic material, and a ceramic material.
97. (currently amended) The apparatus of claim 79, wherein said upper and lower portions of said implant have a non-threaded exterior surface comprises a plastic material.
98. (currently amended) The apparatus of claim 79, wherein said implant has a length, said upper and lower portions having a non-arcuate portion along at least a portion of the length of said implant comprises a ceramic material.
99. (previously presented) The apparatus of claim 79, wherein said implant is formed of a porous material.
100. (previously presented) The apparatus of claim 79, wherein said implant is formed of a material that intrinsically participates in the growth of bone from adjacent vertebral body to adjacent vertebral body through said implant.
101. (previously presented) The apparatus of claim 79, wherein said at least one opening is adapted to retain fusion-promoting materials
102. (previously presented) The apparatus of claim 79, wherein at least a portion of said implant is treated to promote bone ingrowth between said implant and said adjacent vertebral bodies.
103. (previously presented) The apparatus of claim 79, wherein said implant is in combination with harvested bone.